

Remarks

The above-referenced application has been reviewed in light of the Examiner's Final Office Action dated July 11, 2005. Claims 1-20 are currently pending in this application. The Examiner's reconsideration of the rejections is respectfully requested, particularly in view of the following remarks.

In accordance with the Office Action, Claims 1, 2, 5-12, 19 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,852,487 to Fujimori et al. (the '487 or Fujimori) in view of U.S. Patent No. 5,499,128 A to Hasegawa et al. (the '128 or Hasegawa). Applicants' respectfully traverse the present rejections, and submit that Fujimori in view of Hasegawa does not render Claims 1, 5, 10 and 12 obvious for at least the reasons set forth below.

Applicants' pending Claim 1 recites, *inter alia*, "A touch sensor type liquid crystal display comprising ... a plurality of columnar gap controlling spacers ... each of the spacers having two members ... **wherein a cross-section of each spacer ... is no larger in area than either of said first and second contact surfaces**". Thus, Claim 1 sets forth that the spacers are columnar, have two members, and that the cross-sectional area at the contact section between the spacer members is no larger than the contact area between either spacer member and its respective substrate.

The '487 patent reference to Fujimori et al. is generally directed to a touch-sensing LCD, but fails to show columnar spacers, and particularly fails to teach or suggest columnar spacers "wherein a cross-section of each spacer ... is no larger in area than either of said first and second contact surfaces", as recited in Claim 1.

The '128 patent reference to Hasegawa et al. shows an LCD device without any provision or support for a touch-sensor capability. Contrary to the Examiner's assertion (see Action at p.4, lines 9-11), although Hasegawa may show columnar spacers with relatively thin mid-sections, there is no teaching or suggestion that both contact surfaces have a contact **area** greater than the **area** at the midsection.

The Examiner's comparison of Hasegawa's "width L2" with "width L1" is inapplicable because the relationship between the outer widths does not necessarily correspond to the relationship between the associated areas, particularly where the area at the contact portions is significantly reduced by an inner recessed portion or void as shown by the reference. It is noted that Figures 12 and 13 of Hasegawa may be drawn from a different depth than Figure 11, for example, such that the enclosed void at the contact surfaces is obscured.

In Applicants' prior response dated April 25, 2005, the Examiners' reliance on Hasegawa at col. 23, line 61 through col. 24, line 20, was discussed. This text of Hasegawa refers to Figures 12 and 13 (Hasegawa's "fourth modification"), and the Examiner relied on it for the proposition that the cross-section of each spacer is no larger in area than either of the contact surfaces. Applicants' maintain that this reliance on Hasegawa et al. is misplaced.

Figures 10-11 of Hasegawa (Hasegawa's "third modification"), as somewhat described at col. 22, line 65 through col. 23, line 60, and Figures 17-21 of Hasegawa, as somewhat described at col. 24, line 64 through col. 27, line 3, show a recessed portion or void (sometimes labeled 143) at the top contact surface of the spacers, which may include liquid crystal. The recessed portion is not consistently mentioned or labeled even in the views where it is clearly shown. The recessed portion causes a significant reduction in the **contact area**, even though the diameter of the top around the recessed portion may be wider than the midsection of the spacer.

The above-mentioned citation to Hasegawa at col. 23, line 61 through col. 24, line 20, indicates that in the so-called fourth modification, "the columnar spacer was modified ... and ... comprises ... a resin layer ... formed on the center portion of the top surface of the columnar spacer 112 ... subjecting the spacer 112 to developing by using a developing agent to each the edge portion of the surface and the side wall of the columnar spacer 112. The resin and the developing agent

used in the fourth modification **similar to that used in the third modification ...** the thinnest portion noted above corresponds to L2.”

Thus, the “third modification” refers to that of Figures 10 and 11, clearly having the unlabelled recessed portion or void. The text of Hasegawa states that the structure of the fourth modification, which includes Figure 12, is “similar to that used in the third modification”. Nowhere does the text of Hasegawa specify that the recessed portion or void has been replaced for greater contact area in the “fourth modification”. This is to be expected since Hasegawa was not concerned with the added loads of touch-sensors, for example, in a non-touch-sensor type of display.


Thus, Applicants’ respectfully submit that even if the width of the midsection of Hasegawa’s spacer is thinner than the width of the top portion, Hasegawa fails to teach the contact area at said midsection being no greater than the contact area at the top portion, but instead shows a recessed portion that significantly reduces the contact area at the top portion (see *also*, e.g., Hasegawa at col. 26, line 65 through col. 27, line 3).

Therefore, the ‘128 to Hasegawa et al. fails to overcome the deficiencies of either the ‘487 to Fujimori et al. or the Yanawana reference (JP 2000-227596) with respect to the recitations of Applicants’ claimed invention. For example, the cited references and references of record in this case, whether taken alone or in combination, fail to fairly teach or suggest a “touch sensor type liquid crystal display ... wherein a cross-section of each spacer parallel to the plane of a substrate at said intermediate point is no larger in area than either of said first and second contact surfaces”, as recited in Applicants’ Claim 1.

Conclusion:

Accordingly, it is respectfully submitted that independent Claims 1, 5, 10 and 12-13 are in condition for allowance for at least the reasons stated above. Since Claims 2-4, 6-9, 11 and 14-20 each depend from one of the above claims and necessarily include each of the elements and limitations thereof, it is respectfully submitted that these claims are also in condition for allowance for at least the reasons stated, and for reciting additional patentable subject matter. Thus, each of Claims 1-20 is in condition for allowance. All issues raised by the Examiner having been addressed, reconsideration of the rejections and an early and favorable allowance of this case is earnestly solicited.

Respectfully submitted,

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